

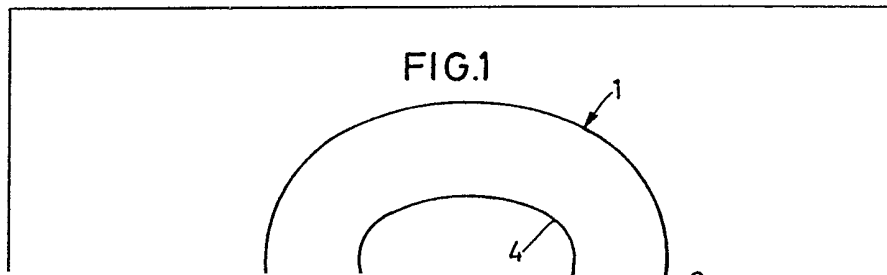
(12) UK Patent Application (19) GB (11) 2 089 930 A

- (21) Application No 8137628
- (22) Date of filing 14 Dec 1981
- (30) Priority data
- (31) 3048863
- (32) 23 Dec 1980
- (33) Fed. Rep. of Germany (DE)
- (43) Application published  
30 Jun 1982
- (51) INT CL<sup>3</sup>  
F16G 15/06
- (52) Domestic classification  
F2Q 53
- (56) Documents cited  
GB 2000247A  
GB 1508615  
GB 1465368
- (58) Field of search  
F2Q
- (71) Applicant  
August Thiele,  
Leckinger Strasse 207,  
5860 Iserlohn-Kalthof,  
Germany, Federal  
Republic of Germany
- (72) Inventor  
Friedhelm Rehbein
- (74) Agents  
Hyde, Heide & O'Donnell,  
2 Serjeants' Inn, London  
EC4Y 1LL

(54) Hanger link for sling chains on a modular system

(57) A hanger linkage, for supporting chains on a modular system, comprises a U-shaped hanger stirrup (1) provided with an aperture (4) and two parallel slots (7, 7) formed by two lobes (6, 6) arranged with mirror symmetry one on each side of a central extended portion (5) of a bridge section (3) of the said hanger stirrup, and a shackle (8) swingingly mounted from the said hanger stirrup on or by a pintle (10) arranged in the plane of the said aperture, the said shackle being provided with two limbs (9, 9) arranged parallel to each other and each being mounted on the said pintle within the said lobes, the said limbs being positioned inwardly of the said stirrup portion whereby the said shackle is generally omega-shaped

and serves for the mounting of round steel chains of predetermined thickness, and is characterised in that the width (14) between the lead-in portions (13) of the said shackle is dimensioned to correspond with the said predetermined thickness (15) of the round steel chains (11) which are to be hung on it, and that the thickness (16) of the central portion (5) of the bridge is substantially the same or slightly larger than the said predetermined thickness of the round steel chains, and that the said lateral lobes (6) have at least the same thickness (17) as the said central portion (5) of the bridge. The hanger stirrup (1) may be made in two parts comprising a stirrup part and a bridge part fitting with a plug-in action, the pintle securing the two parts by passing through corresponding apertures in the parts.



PATENTS ACT 1977

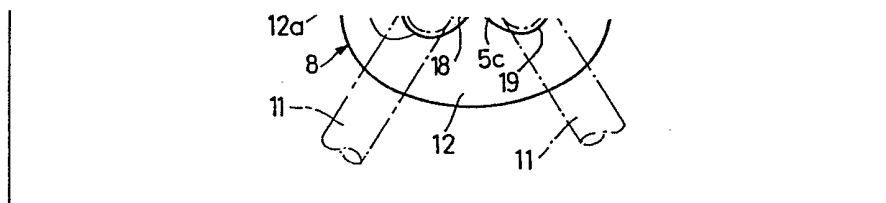
SPECIFICATION NO 2089930A

The following corrections were allowed under Rule 91 on 21 December 1982

Front page, Heading (71) Applicant, for August Thiele, read Firma August Thiele

THE PATENT OFFICE  
20 January 1983

Bas 94526/7



GB 2 089 930 A

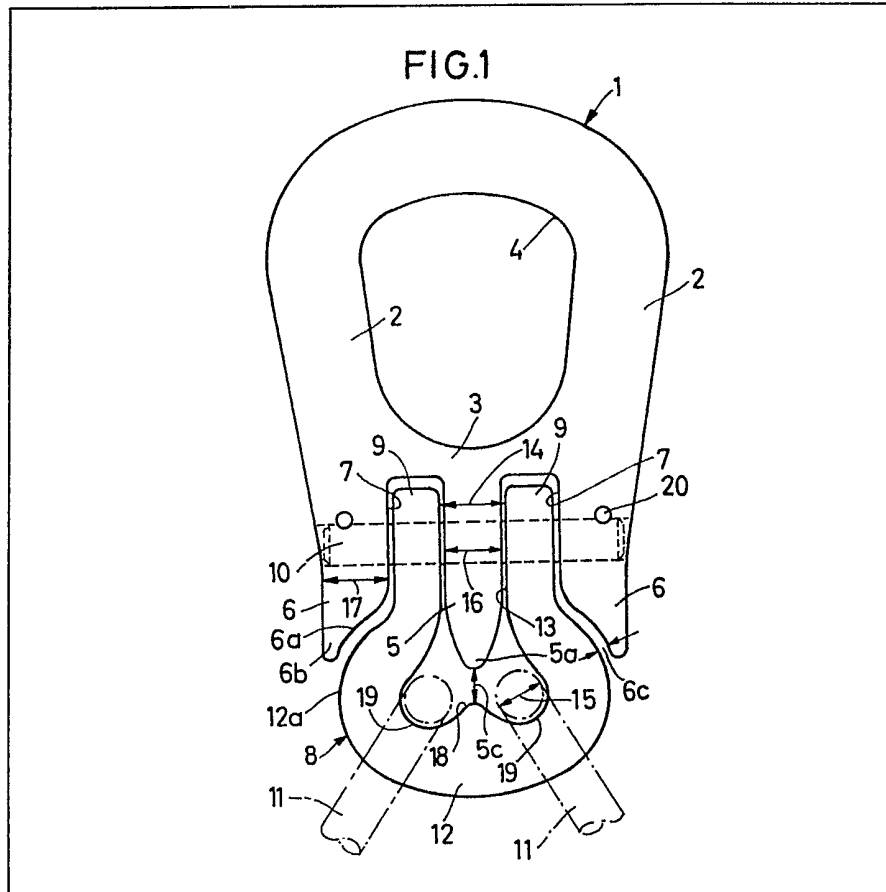
(12) UK Patent Application (19) GB (11) 2 089 930 A

- (21) Application No 8137628
- (22) Date of filing 14 Dec 1981
- (30) Priority data
- (31) 3048863
- (32) 23 Dec 1980
- (33) Fed. Rep. of Germany (DE)
- (43) Application published 30 Jun 1982
- (51) INT CL<sup>3</sup> F16G 15/06
- (52) Domestic classification F2Q 53
- (56) Documents cited GB 2000247A GB 1508615 GB 1465368
- (58) Field of search F2Q
- (71) Applicant August Thiele, Leckingser Strasse 207, 5860 Iserlohn-Kalthof, Germany, Federal Republic of Germany
- (72) Inventor Friedhelm Rehbein
- (74) Agents Hyde, Heide & O'Donnell, 2 Serjeants' Inn, London EC4Y 1LL

(54) Hanger link for sling chains on a modular system

(57) A hanger linkage, for supporting chains on a modular system, comprises a U-shaped hanger stirrup (1) provided with an aperture (4) and two parallel slots (7, 7) formed by two lobes (6, 6) arranged with mirror symmetry one on each side of a central extended portion (5) of a bridge section (3) of the said hanger stirrup, and a shackle (8) swingingly mounted from the said hanger stirrup on or by a pintle (10) arranged in the plane of the said aperture, the said shackle being provided with two limbs (9, 9) arranged parallel to each other and each being mounted on the said pintle within the said lobes, the said limbs being positioned inwardly of the said stirrup portion whereby the said shackle is generally omega-shaped

and serves for the mounting of round steel chains of predetermined standardized thickness, and is characterised in that the width (14) between the lead-in portions (13) of the said shackle is dimensioned to correspond with the said predetermined thickness (15) of the round steel chains (11) which are to be hung on it, and that the thickness (16) of the central portion (5) of the bridge is substantially the same or slightly larger than the said predetermined thickness of the round steel chains, and that the said lateral lobes (6) have at least the same thickness (17) as the said central portion (5) of the bridge. The hanger stirrup (1) may be made in two parts comprising a stirrup part and a bridge part fitting with a plug-in action, the pintle securing the two parts by passing through corresponding apertures in the parts.



GB 2 089 930 A

FIG.1

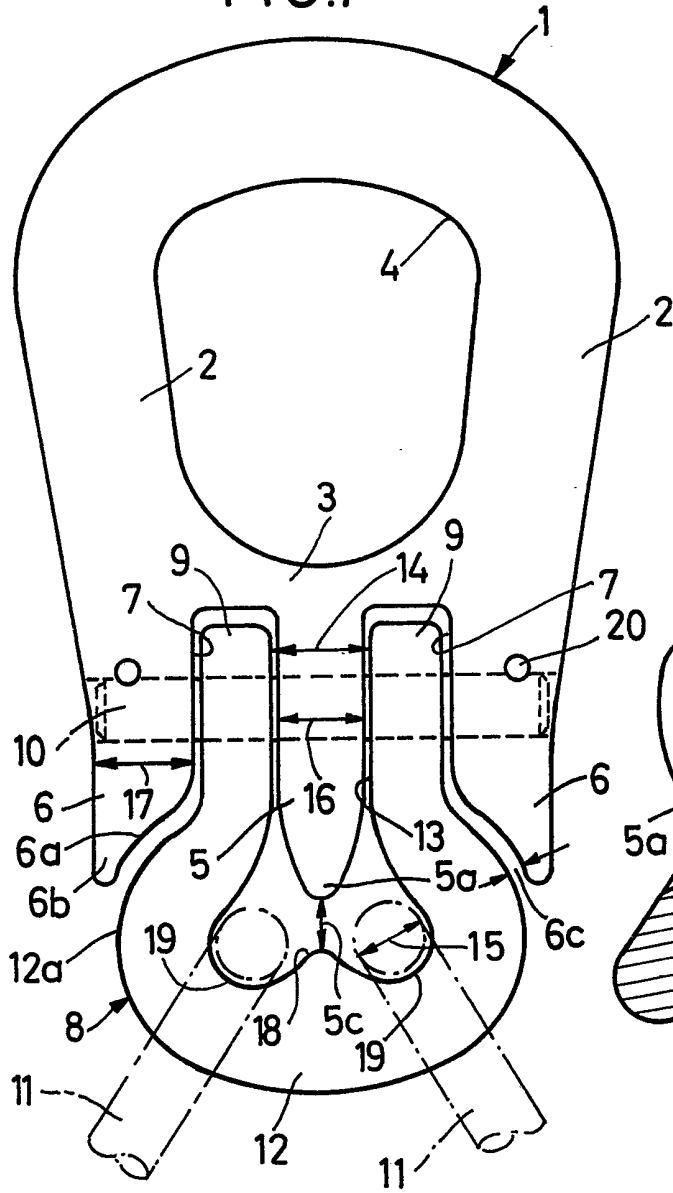


FIG.2

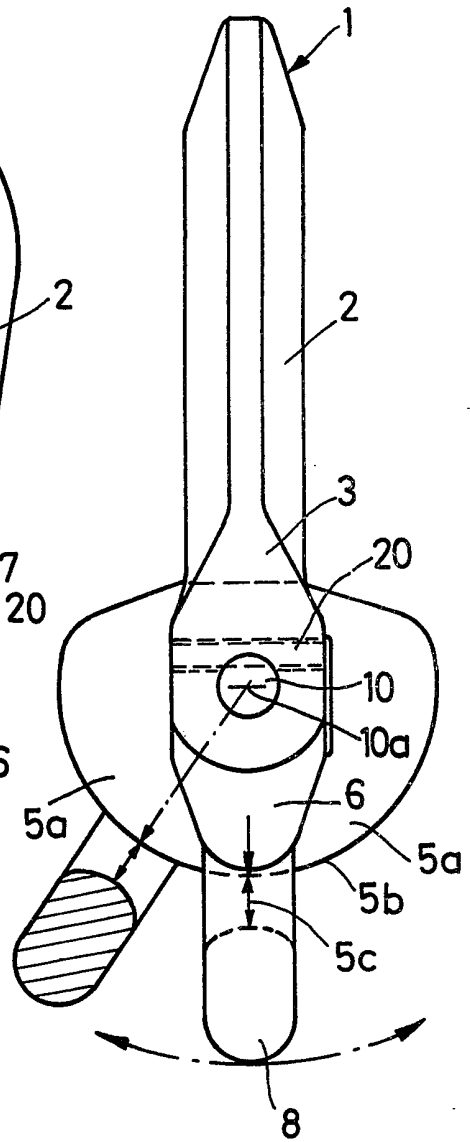


FIG. 3

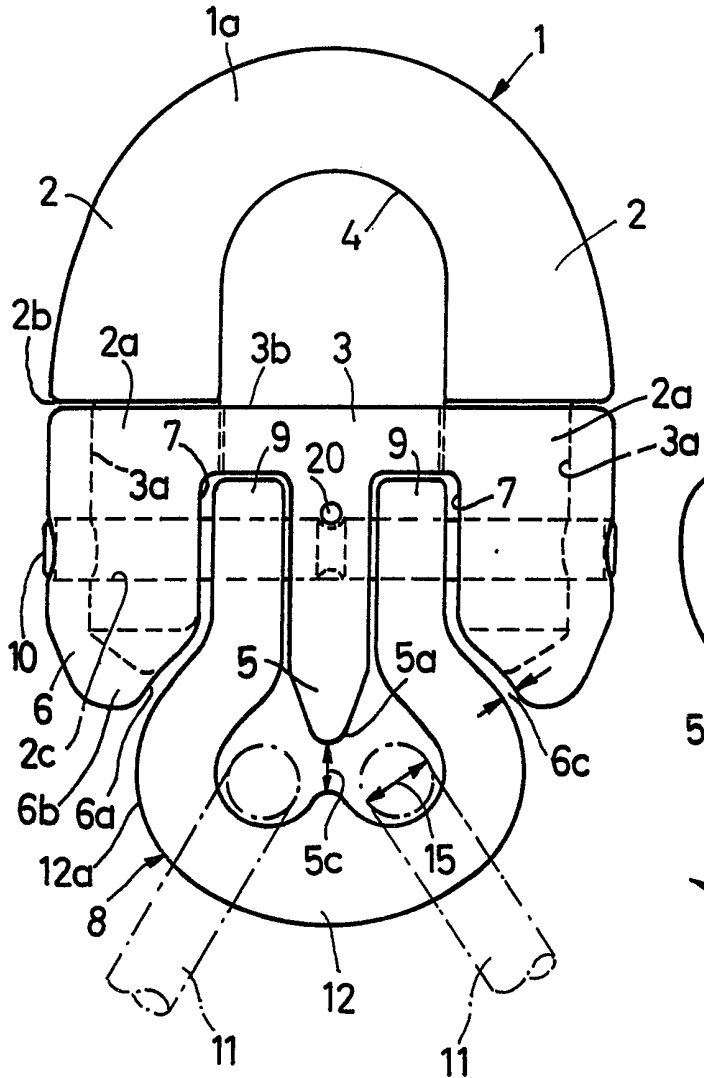


FIG. 4

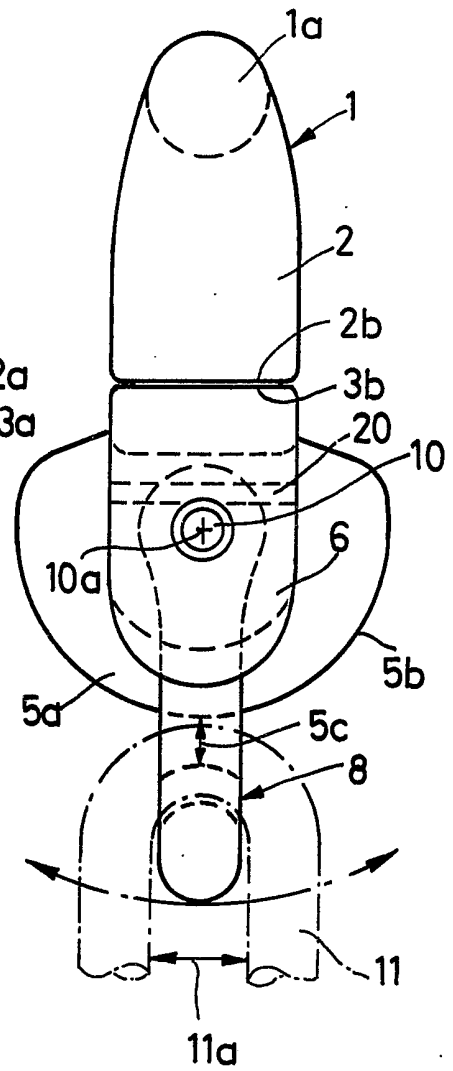


FIG. 5a

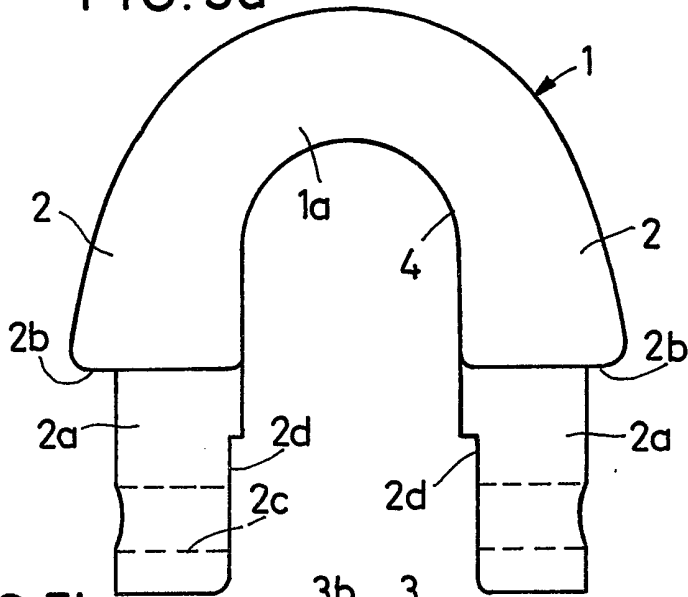


FIG. 6a

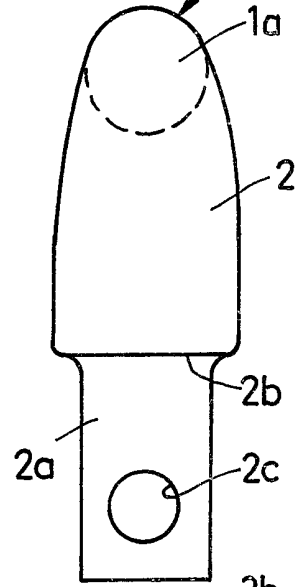


FIG. 5b

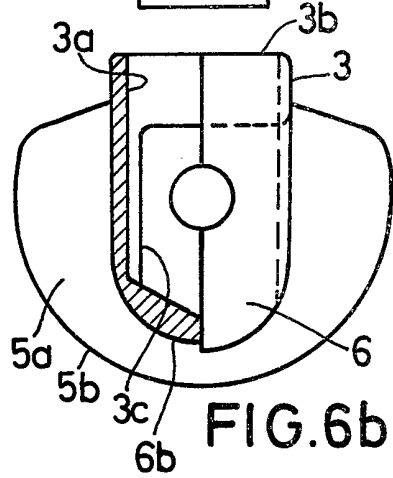
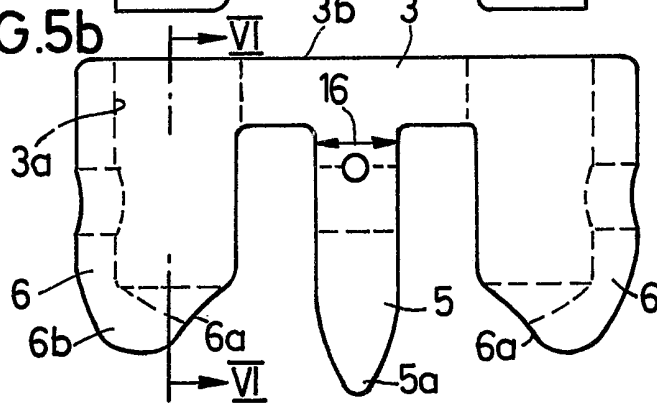
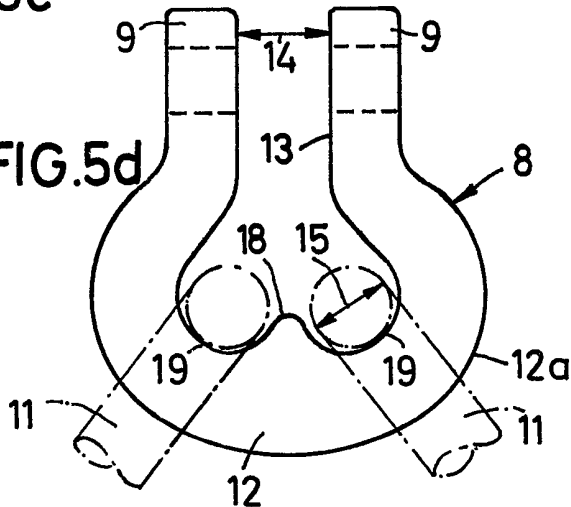


FIG. 5c

FIG. 5d



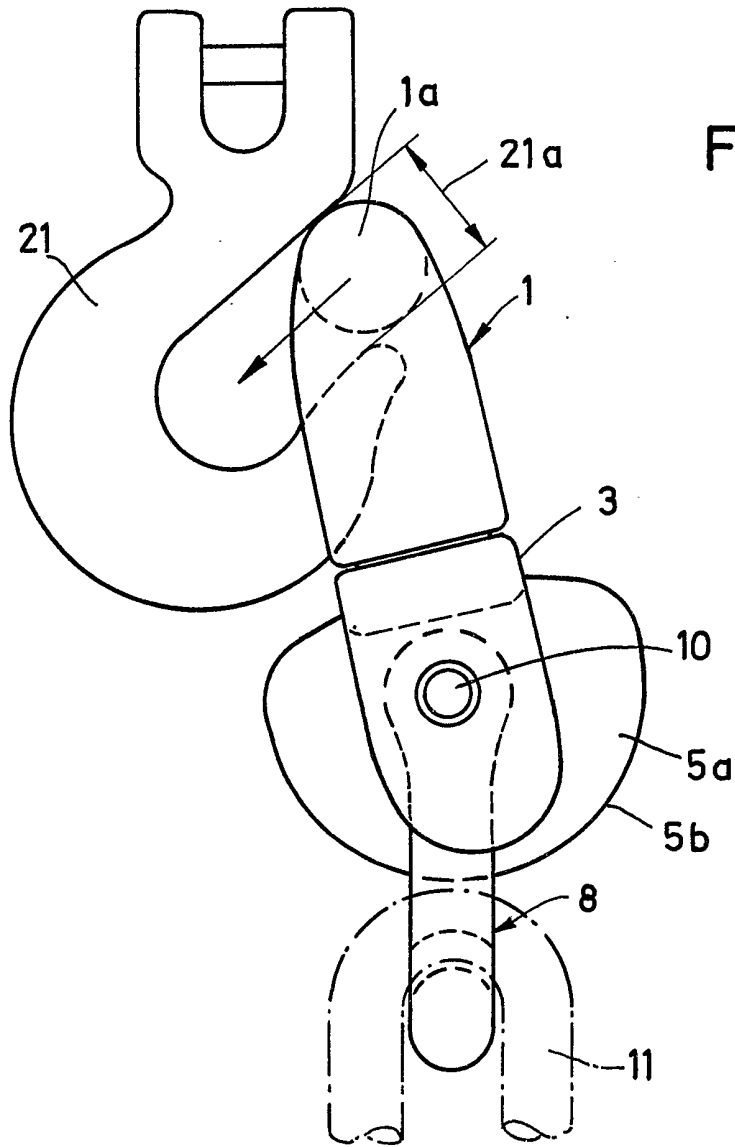


FIG. 7

## SPECIFICATION

**Hanger link for sling chains on a modular system**

This invention relates to a hanger link for sling chains on a modular system comprising a

5 U-shaped hanger link and a shackle

In known hanger links for round steel chains on a modular system the shackle is made essentially U-shaped. The limbs of the shackle are spaced a comparatively wide distance apart and engage in

10 corresponding slots in the ear part of the hanger link on both sides of a central portion which is dimensioned to be of corresponding width, whilst the lateral lobes are made comparatively weak. The round steel chains mounted on the shackle

15 must when used in accordance with specified regulations, leave the hanger link at a maximum angle of spread of 120°.

For security against faulty use of such hanger links the limbs and the cross-section of the stirrup

20 of the U-shaped shackle are in fact so dimensioned that no weaker round steel chains can be fitted to the stirrup of the shackle, the link opening in which has an inner width less than the cross-section of the stirrup of the shackle, and

25 furthermore there is in fact on the hanger link a plate inscribed with data referring to permissible loading. However this does not prevent a user from mounting on the stirrup of the shackle either stronger round steel chains provided these have

30 an adequate inner width, or from attaching to the shackle three or more chains instead of the permissible number of one or two chains. This applies also to a further known hanger link for sling chains, in which the stirrup of the shackle is

35 made essentially omega-shaped. In addition for the two known hanger links there is the possibility of using the hanger link, contrary to its employment in accordance with the regulations, as a chain-connecting link, so that the stirrup of

40 the shackle in the stretched state of the round steel chains which have been fastened together, becomes heavily loaded in tension and bends transversely to its longitudinal axis of symmetry of its two limbs in such a way that the eyes of the

45 shackle become forced against the lateral lobes of the hanger link and bend the lobes outwardly. The pintle on which the shackle is suspended is moreover impermissibly loaded in bending and shear.

50 The problem which the invention seeks to overcome is to construct a hanger link for sling chains on a modular system in such a manner that whilst preserving strictly the modular system, only chains of predetermined standard strength may be

55 used, that the number of chains employed is restricted in the case of the hanger link to the maximum number of chains provided for, and that furthermore it is guaranteed that even in the case of usage of the hanger link contrary to the system, the shackle for the mounting of the round steel

60 chains does not become bent outwardly, and also the lateral lobes as well as the pintle passing through them withstand at all times the loadings

65 which occur.

To this end the invention provides a hanger linkage for supporting chains on a modular system and comprising a U-shaped hanger stirrup provided with an aperture and two parallel slots formed by two lobes arranged with mirror

70 symmetry one on each side of a central extended portion of a bridge section of the said hanger stirrup; and a shackle swingingly mounted from

the said hanger stirrup on or by a pintle arranged in the plane of the said aperture, the said shackle

75 being provided with two limbs arranged parallel to each other and each being mounted on the said pintle within the said lobes, the said limbs being positioned inwardly of the said stirrup portion whereby the said shackle stirrup is generally

80 omega-shaped and serves for the mounting of round steel chains of predetermined standardized thickness, characterised in that the width between the lead-in portions of the said shackle stirrup is dimensioned to correspond with the said

85 predetermined thickness of the round steel chains which are to be hung on it, and that the thickness of the central portion of the bridge is substantially the same or slightly larger than the said predetermined thickness of the round steel chains,

90 and that the said lateral lobes have at least the same thickness as the said central portion of the bridge.

Due to the fact that the width of the lead-in at the side of the shackle is dimensioned to

95 correspond with the nominal (predetermined) thickness of round steel chains which are to be hung on it, it is ensured that round steel chains having a greater nominal thickness cannot be hung in the shackle. Furthermore it is thereby

100 possible to keep the central portion of the bridge lying between the limbs of the shackle, relatively narrow and instead to make the lateral fork lobes so strong that they have at least the same thickness as the central portion of the bridge, so

105 that, if the hanger link is used for purposes other than originally intended, for instance as a chain-connecting link, it may accept consequent loadings without the hanger link becoming heavier and clumsier in design, thus providing in practice

110 simpler and more reliable handling.

In a particularly useful form of the invention, the hanger stirrup may be made in two parts comprising a stirrup part and a bridge section part attachable thereto as a plug-in part.

115 In one embodiment of the invention the said central portion of the said bridge portion extends perpendicularly in two directions from the plane of the U-shaped hanger stirrup in the form of nose-like projections and also extends towards the

120 said shackle so that the distance of the bottom of the extension from the shackle stirrup is less than the predetermined thickness of round steel chains which are to be hung on it, and that transversely to the pintle towards both sides of the hanger link the said nose-like projections are formed

125 substantially as circular arcs having as centre the longitudinal axis of the pintle and has a radial outer periphery so that the radial distance from

the shackle stirrup is always constant over the whole range of swing of the shackle.

An advantage of such an embodiment is that a satisfactory separation is obtainable of the two round steel chains hung in the shackle of the hanger link, i.e. not only in the stretched hanging position of the hanger link but also in any position deviating from it over the whole range of swing of the shackle of about 180°, or possibly more.

The separation of chains hung on the shackle of the hanger link may be still further improved by the provision, in the portion of the shackle lying opposite to the central extended portion of the bridge an internal centrally-located toe which separates two suspending pockets for locating chains suspended therefrom. This feature provides a construction which is particularly favourable to handling of the hanger linkage, particularly under extreme loading.

A further preferred feature is that the ends (6b) of the said lobes of the said hanger stirrup each extend downwardly beyond the said shackle limbs and towards the shackle stirrup and taper off into wedge-shaped tongues at a constant clearance from the outer periphery of the shackle stirrup.

As hereinbefore referred to the U-shaped hanger stirrup may be formed in two parts, comprising a stirrup part and a bridge part, the said stirrup part being provided with parallel spigots and the said bridge part being provided with blind holes corresponding to the said spigots, the said stirrup part being engaged with the said bridge by the said spigots engaging in said corresponding blind holes, and being secured thereto by the said pintle passing through corresponding apertures in the said bridge part and said spigots.

By such a construction there is achieved a particularly favourable production and use of hanger links of the invention in that the hanger stirrup and the bridge thereof are produced separately and then plugged one into another as occasion requires without welding or other rigid connection, and can be released one from another at any time. This favours in particular the use of hanger links with closed hanger ears which fit them in a modular system, in which all of the parts employed may before being built be hardened in accordance with regulations and as required by experience, without the hardness achieved being dissipated by a welded connection.

In such an embodiment it is particularly advantageous if the blind holes in the bridge are made each with a run-out at the side towards the two limbs of the shackle in such a way that the spigots of the hanger stirrup, which engage in the blind holes, lie directly next to the limbs of the shackle and thus fulfil the function of abutments for the limbs of the shackle. The contact of the limbs of the shackle against the spigots may be still further improved by the feature of Claim 7, and through the feature of Claim 8 as a satisfactory axial fixing of the hanger stirrup with respect to the bridge part is also achieved. Finally through the feature of Claim 9 a satisfactory use

of hanger links of that kind in combination with load hooks which match it in the modular system, is ensured.

Preferred embodiments of the invention are hereinafter described and illustrated diagrammatically in the accompanying drawings, of which

Figure 1 is a front view of a first embodiment of a hanger link for sling chains on a modular system according to the invention, having a closed hanger ear;

Figure 2 is a side view of the embodiment of Figure 1, in which the shackle is in addition part-sectioned in a twisted position;

Figure 3 is a front view of a second embodiment of a hanger link of the invention;

Figure 4 is a side view of Figure 3;

Figures 5a to 5d are exploded views of parts of the hanger link of Figures 3 and 4;

Figure 6a is a side view of the hanger stirrup of Figure 5a;

Figure 6b is a side view of the associated bridge portion, partially sectioned along the line of section VI—VI of Figure 5b, and

Figure 7 is a view of a hanger link according to the invention in combination with a load hook.

In the drawings the hanger links for sling chains on a modular system comprise an essentially U-shaped hanger stirrup 1, the two limbs 2 of which are connected together by a bridge 3 and include between them a hanger or stirrup opening 4.

In the embodiment of Figures 1 and 2, the U-shaped hanger stirrup 1 is drop-forged in one piece with the bridge 3, and from the bridge 3 a centre portion 5 pointing away from the opening 4 projects downwardly as do two lateral fork lobes 6, which are arranged with mirror symmetry on opposite sides of the central portion 5 and with respect to the central portion 5 leave free two parallel slots 7 for the two limbs 9 of a shackle 8 which is supported so as to swing about a pintle 10 arranged in the plane of the opening 4 which serves for the mounting of e.g. two round steel chains 11 having standardized nominal thickness.

As Figures 1 and 2 show, the two limbs 9 of the shackle 8 are drawn inwardly with respect to the shackle stirrup 12 in parallel with one another so that the shackle stirrup 12 has at the bottom portion the shape of an ellipse with a lead-in 13 for the round steel chains 11, the width 14 of which is dimensioned with respect to the nominal thickness 15 of the round steel chains with an appropriate excess. Hence the shackle stirrup 12 is as a whole omega-shaped, and the two limbs 9 and the cross-section of the shackle stirrup 12 are so dimensioned that no round steel chains may be hung in the stirrup which are weaker than provided for according to a modular system.

The thickness 16 of the central portion 5 of the bridge is substantially equal to, or only slightly greater than, the nominal thickness 15 of the round steel chains 11 which are to be hung on it, in so far as the width 14 of the lead-in 13 of the shackle allows it. The two lateral fork lobes 6 have



at least the same thickness 17 as the central portion 5 of the bridge, and may be considerably thicker.

In order to achieve a satisfactory separation of the end links of the round steel chain 11 hung in the shackle 8, the central portion 5 of the bridge engages by a nose-like projection 5a deeply between the limbs 9 of the shackle and transversely to the pintle 10 towards both sides of the hanger link in approximately the shape of a circular arc having as centre the longitudinal axis 10a of the pintle 10, and has a radial outer periphery 5b so that the radial distance 5c from the shackle stirrup 12 is unaltered over the whole range of swing of the shackle 8 and is less than the nominal thickness 15 of the round steel chains 11.

By a toe 18 lying opposite the central portion 5 of the bridge 3, in both embodiments, there are formed on the shackle stirrup 12 two slinging pockets 19 separated one from another for the reception of round steel chains 11.

The handling and thereby the utility of hanger links of the invention are improved by the inner contour 6a of the lateral fork lobes 6 being adapted to the outer periphery 12a of the shackle 8 in such a way that the tapering ends 6b of the fork lobes 6 project on both sides beyond the limbs 9 of the shackle towards the shackle stirrup 12, and taper off into wedge-shaped tongues at an essentially constant clearance 6c from the outer periphery 12a of the shackle stirrup 12.

In the modified second embodiment shown in Figures 3 to 6b, the U-shaped hanger stirrup 1 is not connected in one piece to the bridge 3 but engages by parallel spigots 2a in correspondingly dimensioned blind holes 3a in the bridge 3. The spigots 2a on both limbs 2 of the hanger stirrup 1 are relieved in the form of a step at the point 2b at the level of the top edge 3b of the bridge 3, so that the hanger stirrup 1 is supported on the bridge 3. The bridge 3 forms in this embodiment a kind of clasp and is connected to the hanger stirrup 1 by the pintle 10 passing through the bridge 3, the limbs 9 of the shackle 8 and corresponding openings 2c in both spigots 2a of the stirrup 1.

The bridge part 3 accordingly shows in the two spigots 2a on the stirrup 1 and the two limbs 9 of the shackle, a row of corresponding apertures drilled coaxially through which the pintle 10 is passed, which is held in position by a spring cotter 20 and connects the individual parts of the hanger link which have been plugged into one another, locked together.

A particularly secure and rigid and therefore permanent fitting of the shackle 8 to the bridge 3 is achieved by the blind holes 3a being made each with a run-out 3c at the side towards the two limbs 9 of the shackle in such a way that the spigots 2a engaging in the bridge 3 lie directly next to the limbs 9. The spigots 2a are provided on both sides of the shackle limbs 9 with flats 2d which support the shackle limbs against bending apart.

As shown in Figure 7, the hanger stirrup 1 of

the hanger link is dimensioned in its cross-sectional thickness in the upper hanger region 1a to the width of jaw 21 of a load hood 21 which matches it in the modular system, which applies to both embodiments.

#### CLAIMS

1. A hanger linkage for supporting chains on a modular system and comprising a U-shaped hanger stirrup (1) provided with an aperture (4) and two parallel slots (7, 7) formed by two lobes (6, 6) arranged with mirror symmetry one on each side of a central extended portion (5) of a bridge section (3) of the said hanger stirrup; and a shackle (8) swingingly mounted from the said hanger stirrup on or by a pintle (10) arranged in the plane of the said aperture, the said shackle being provided with two limbs (9, 9) arranged parallel to each other and each being mounted on the said pintle within the said lobes, the said limbs being positioned inwardly of the said stirrup portion whereby the said shackle stirrup is generally omega-shaped and serves for the mounting of round steel chains of predetermined standardized thickness, characterised in that the width (14) between the lead-in portions (13) of the said shackle stirrup is dimensioned to correspond with the said predetermined thickness (15) of the round steel chains (11) which are to be hung on it, and that the thickness (16) of the central portion (5) of the bridge is substantially the same or slightly larger than the said predetermined thickness of the round steel chains, and that the said lateral lobes (6) have at least the same thickness (17) as the said central portion (5) of the bridge.

2. A hanger link according to Claim 1, characterised in that the said central portion of the said bridge portion extends perpendicularly in two directions from the plane of the U-shaped hanger stirrup in the form of noselike projections (5a) and also extends towards the said shackle so that the distance (5c) of the bottom of the extension from the shackle stirrup (12) is less than the predetermined thickness (15) of round steel chains (11) which are to be hung on it, and that transversely to the pintle (10) towards both sides of the hanger link the said noselike projections (5a) are formed substantially as circular arcs having as centre the longitudinal axis (10a) of the pintle (10) and has a radial outer periphery (5b) so that the radial distance (5c) from the shackle stirrup (12) is always constant over the whole range of swing of the shackle (8).

3. A hanger link according to Claim 1 or Claim 2 in that the said shackle is provided with an internal centrally-located toe (18) which separates two suspending pockets (19, 19) for locating chains suspended therefrom.

4. A hanger link according to any of Claims 1 to 3, characterised in that the ends (6b) of the said lobes of the said hanger stirrup each extend downwardly beyond the said shackle limbs and towards the shackle stirrup (12), and taper off into wedge-shaped tongues at a constant clearance

(6c) from the outer periphery (12a) of the shackle stirrup.

5 A hanger link according to any of Claims 1 to 4, characterised in that said U-shaped hanger stirrup is made in two parts comprising a stirrup part (1 — Figure 3) and a bridge part (3 — Figure 3), the said stirrup part being provided with parallel spigots (2a) and the said bridge part being provided with blind holes (3a) corresponding to the said spigots, the said stirrup part being engaged with the said bridge by the said spigots engaging in said corresponding blind holes, and being secured thereto by the said pintle passing through corresponding apertures in the said bridge part and said spigots.

15 6. A hanger link according to Claim 5, characterised in that the said blind holes (3a) in the bridge (3) are each provided with a run-out (3c — Figure 6a) on the side towards a corresponding limb (9) of the shackle so that the spigots (2a) of the hanger stirrup (1) lie directly

next a said corresponding limb of the shackle.

25 7. A hanger link according to Claim 5 and Claim 6, characterised in that the said spigots are each provided with a flat (2d — Figure 6a) to contact a side of a corresponding shackle limb (9).

30 8. A hanger link according to any of Claims 5 to 7, characterised in that the said spigots on the limbs of the hanger stirrup are provided with a step at the level of the top edge of the bridge when assembled thereto.

35 9. A hanger link according to any of Claims 1 to 8, characterised in that the hanger stirrup of the hanger link is dimensioned in its cross-sectional thickness in the upper hanger region (1a) to correspond with the width of jaw (21a) of a load hook (21) which matches it in the modular system.

40 10. A hanger link according to Claim 1, substantially as hereinbefore described and illustrated in any of the accompanying drawings.